THE IMPACT OF INTERACTIVE TECHNOLOGY FEATURES IN SPORTS RETAIL ENVIRONMENT ON CONSUMERS' USER EXPERIENCE AND BEHAVIORAL INTENTION

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ABSTRACT

Growing number of sport retail brands started to create innovative shopping experience by implementing advanced technology to their physical retail store, such as interactive digital screen, projection mapping, augmented reality mirror, and even virtual reality experience station. However, the attitudes and feedbacks of consumers with different shopping values towards this trend were not being studied. The purpose of this research is to understand the impact of interactive technology features in the sports retail environments on consumers' perception and behavior in the shopping environment. To investigate the impact, a between-subjects experiment was conducted with 61 college students using 3D simulation technology. Participants were first asked to complete a survey regarding their individual shopping value (hedonistic/utilitarian), and after the virtual shopping experience, their emotional and cognitive perceptions and shopping behavioral intentions asked. Their responses were analyzed to compare the experience under two distinct store conditions. The findings of this research will help both researchers and retailers understand and integrate interactive technology efficiently to optimize customers' shopping experience.

BIOGRAPHICAL SKETCH

Jiaming Zhang is currently finishing her second year of master in Design and Environmental Analysis at Cornell University. She will graduate with a Master of Science degree in Human Environment Relations in August 2018.

Jiaming has also earned an undergraduate degree from Cornell University in May 2017. Due to her strong interest in the application of interactive technology in design environment and her desire to explore design research method, she decided to continue her design education at Cornell University.

During her five years at Cornell University, Jiaming has joined in various project teams to enrich her school life and to build up team-work skills. She also participated in different researches in order to explore her interest and start her own research.

In addition to academics, Jiaming was deeply impressed by astonishing nature environment in Ithaca. Ithaca's winter and fall, Ithaca's water, and Ithaca people made her college life memorable and unforgettable.

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I would also like to thank McGarret for providing the original models of mannequin during the process of building the virtual retail environment.

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Introduction

An increasing number of retailers striving to catch consumers' eyes using technology enabled new design features. For example, Nike, as a leading sports brand, took the initiative and created an interactive retail store at Soho, New York, with big digital screens and animated projection mapping to build a high-tech and energetic shopping environment. Due to the increasing application of interactive technology features within the retail stores, researchers have been investigating the best practices to explain this trend (Shankar, Inman, Mantrala, Kelley & Rizley, 2011). Innovative technologies in the shop has been found to gear retail stores more toward shoppers′ needs than before (Shankar et al., 2011). This study aims to understand the effectiveness of implementing immersive technologies within sports retail space, it also aims to provide an experimental insight to guide potential sports interior design and market implications by testing users' shopping behavioral intention under hypothesized virtual simulations of the sports retail environments.

First, literature on the measurements of emotional experience were discussed. Next, literature on the role of emotional states on mediating the influence of shopping motivations on retail outcomes is discussed, with a base of information processing theory and a shift of focus on various dimension of shopping motives. Then, the importance of store environment in influencing user experience and behavioral intentions in retail settings is analyzed through literature reviews. Finally, the development of the interactive technology usage within the retail environment, both interior and exterior, is described, with a focus on the latest available interactive technology features.

Background

Emotional Experience

Mood and affect has been studied as significant variables influencing purchasing behaviors (Gardner and Rook, 1988; Rook and Gardner, 1993). Different measurements of emotional experience on shopping experience were mentioned and compared by Machleit and Eroglu (2000), including Plichik's eight emotional categories scale (Plichik, 1980), Izard's differential emotion theory scale (Izard, 1977), and Mehrabian and Russell's (PAD) scales (Mehrabian and Russell, 1974). Machleit and Eroglu found that each scale had different advantages. Plutchik' scale was more suitable for expectancy and acceptance when studying salesperson intervention, Izard's scale was more suitable for measuring unpleasant experience, and Mehrabian and Russell's scale was better at measuring emotions including arousal component (Machleit & Eroglu, 2000).

As discussed by Machleit and Eroglu (2000), each measurement captured different emotional types, and was effective in measuring various environment types. Another valid and efficient measurement of two primary dimensions of mood— Positive and Negative Affect (PANAS), was developed by Wastson, Clark, and Tellegen (1988). The scale is well-cited and used by many researchers in measuring consumers' emotional experience in retail conditions. Positive affect (PA) represents a person's feelings enthusiastic, active, and alert (Beatty and Ferrell, 1998, p. 172), and negative affect (NA) represents feelings of distress and non-pleasurable engagement. High PA refers to high level of pleasure, evolvement and concentration, and high NA refers to nervous and stress (Watson, Clark, & Tellegen, 1988). This study will use these two primary dimensions of affects to measure one's emotional experience in a sports retail environment.

Shopping motivations, Emotion states, and Retail outcomes

According to the information processing theory (Newell & Simon, 1958; Norman, 1968), people would make shopping decisions, which are predicted through their behavioral intentions, through gathering, interpreting, and using the information they perceived. Additionally, researchers have shown that consumers' shopping motivation is guided by the information being given. As a result, individual's shopping motivation plays a big role in determining how effective different information display would be in converting positive experience into shopping intention (Kaul, 2006).

Dawson, Bloch, and Ridgway (1990) have studied the impact of shopping motivation on emotional states and on retail outcomes, for example retail preference and choice. They categorized shopping motives into product-oriented, experiential, and a combination of two. According to Dawson, Bloch, and Ridgway's study, there's a mixed mediation effect of emotions on shopping motive and retail outcomes; for consumers with product-oriented motives, the effect of product motives on retail outcomes is mediated by feeling of pleasure. However, consumers with experiential motives are less influenced by the feeling of pleasure. The authors suggested that other possible shopping motivations and dimensions of experience measurements could be studied (Dawson, Bloch, & Ridgway, 1990).

Researchers have directed attention to the emotional aspect of shopping and the need to understand the shopping experience from both utilitarian and hedonic perspectives (Bloch & Richins, 1983; Kim, 2006). Arnold and Reynolds (2003) investigated hedonic reasons why people go shopping, and Kim (2006) found two dimensions of utilitarian aspect of consumer behavior, efficiency and achievement, which were directed toward satisfying a functional or economic need (Babin & Darden, 1996).

Jones, Reynolds, and Arnold (2006) then studied how hedonic and utilitarian shopping values differ in their relationships with several important retail outcome variables, such as positive word of mouth, loyalty, repatronage intention, and repatronage anticipation were measured. Word of mouth has been found to be a valid and reliable source of information in the retail context (Higie, Feick & Price, 1987). Oliver and Swan (1989) concluded that consumers' emotional responses to consumption situations were indicated by word-of-mouth. Loyalty refers to a deeply commitment to a brand, and repatronage intention refers to whether a customer will shop again at the same retail store (Oliver, 1999). Jones, Reynolds, and Arnold also found that hedonic shoppers tend to be more satisfied with a higher level of positive word of mouth, and utilitarian shoppers tend to have stronger loyalty and repatronage intentions (Jones, Reynolds, & Arnold, 2006).

Store environment, Emotional experience, and Behavioral intention

While evaluating the effectiveness shopping motivations on user experience and retail outcomes, store atmospherics have been investigated widely by researchers as a key variable in influencing user experience and behavioral intentions. In retail settings, design elements are used to provide consumers a positive shopping experience, and retailers attempt to manipulate design factors in order to trigger consumers' certain desirable emotions.

Past research have shown that store atmospherics can evoke emotional responses in shoppers (Donovan & Rossiter, 1982; Darden & Babin, 1994; Hui, Dube, & Chebat, 1997; Sherman, Mathur, & Smith, 1997). Store atmospherics originally refers to the variables which could characterized the store environment (Turley & Milliman, 2000). Kotler defined store atmospherics as "the conscious designing of space to create certain effect in buyers" and "the

effort to design buying environments to produce specific emotional effects in the buyer that enhance his purchase probability." Milliman and Fugate (1993, p. 68) adjusted this definition as "any component within an individual's perceptual field which stimulates ones senses and thus affects the total experience of being in a given place at a given time." Building on an extensive review of atmospherics literature, Turley and Milliman (2000) instead suggest five broad categories: exterior of the store, the general interior, the layout and design variables, the point-of-purchase and decoration variables, and human variables.

Mohan, Sivakumara and Sharma (2013), taking the Gestalt approach, tried to understand the effect of the store environment, consists of ambient factors such as lighting, scent, and music; design factors such as layout and assortment, and individual characteristics (shopping enjoyment tendency and impulsive buying tendency) on consumers' impulsive buying behavior through positive and negative affect, and urge to buy. Impulsive buying behavior is one of the major indicators of consumers' purchasing intentions, is "a sudden and immediate purchase with no pre-shopping intentions either to buy the specific product category or to fulfill a specific buying task" (Beatty & Ferrell, 1998). From the study, they found out that store environment drives impulse buying behavior through impulsive urge (Mohan, Sivalkurmara & Sharama, 2013). However, the research result could not be easily generalized to other types of environment except for the grocery retail chain, a place where people came for daily basic needs. Thus, in order to understand the influence of store environment on consumers' impulsive behavior comprehensively, Future researchers should explore other retail categories such as personal products, apparel, accessories, and personal electronics (Jones, Reynolds, Weun & Beatty, 2003).

Berman and Evans (1995) divide atmospheric stimuli or elements into four categories: the exterior of the store, the general interior, the layout and design variables, and the point-of-purchase and decoration variables. Turley & Milliman (2000) added human variable to Berman and Evans' existing model. They examined 60 published empirical studies on external variables (e.g., aesthetics of building/shop exteriors, surrounding areas, parking availability), interior variables (e.g., store layout and design, point-of-purchase and decoration), human variables (e.g., crowding, privacy, customer characteristics, personnel/employee characteristics, and employee uniforms).

The dependent variables of these studies include retail sales, consumers' shopping time in the environment, and their approach-avoidance behavior, which are all directly observable. Consumers' experience, a key mediator of the effect of store auto score on consumers' behavior intention, has not been studied. Berman and Evans found enough evidence to state that the atmosphere has an effect on consumer spending and that variations of atmospheric variables affect the amount of money people spend and the number of items purchased.

Interactive technology features

Significant changes in technology, economy, and globalization are constantly shaping shopper behavior and innovations in the shopper marketing. Interactive technology was mainly considered as a point-of-purchase and decoration variable based on Berman and Evans' atmospheric stimuli model (1995). Pantano and Di Pietro (2012) argued that technology-based innovation can, in fact, make traditional stores more attractive and aesthetically appealing, thus influencing consumers shopping behavior. Two aspects are considered according to the literature: exterior and interior digital technology.

As a new variable of store atmospherics, store window display relies on the visual stimuli used to positively influence consumers' behavior (Oh & Petrie, 2012). Pantano and Di Pietro (2012) found that consumers have positive reactions towards new technology-enriched storefront windows. Though gender was considered as a moderator and no significant differences on factors influencing their entry decisions were being found, culture might be a salient moderator that's not being considered but played an important role in their study. Due to the fact that the participants were all Italian students, overall positive reactions towards novel technology might be an alternative explanation for the positive influence of the storefront technology on the entry decision.

The relationship between the use of interactive technology features within the store and consumers' experience has been an interesting topic to researchers. Bodhani (2012) found that retailers tended to implement advanced interactive technology to influence consumers' behavorial and expectation. Based on this theoretical perspective, Poncin's & Minoun's (2014) study focuses specifically on the impact of two technologies, a magic mirror with augmented reality and an interactive games terminal, in a toy brand's flagship store on consumers' holistic perception of the store atmosphere, shopping values, positive emotions, satisfaction and behavior intentions. They found that both technologies showed a positive effect on the holistic perceptions of store atmosphere, and had a direct effect on positive emotions, shopping value, and behavioral intentions. An alternative explanation for the result was that this study focused on the effect of playful technologies, and the context of the study was intrinsically playful, which coincidently matches with children's playful characteristic. Therefore, future researchers should investigate if they could obtain similar results in less playful store environments.

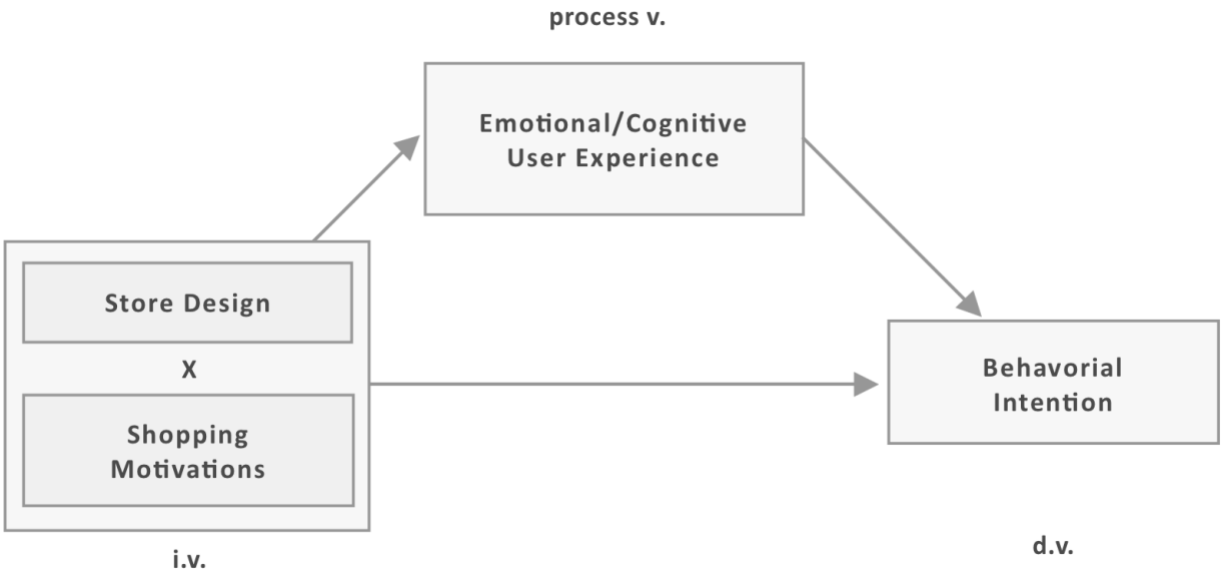
Besides implementing high-tech features for pure playfulness, Saakes, Yeo, Noh, Han, & Woo (2015) explored the practical development of magic mirror. They designed a magic mirror in virtual fitting rooms to let people evaluate fashion items without actually putting them on. The result of the study showed that multiple display and interactive surfaces provided users a seamless virtual fitting experience (Saakes, Yeo, Noh, Han, & Woo, 2015). However, the application of this technology in real retail environments is yet to be studied.

Poushneh and Vasquez-Parraga (2017) conducted a laboritory study in order to undetstand the effect of augmented reality enriched technology in multiple levels of interactivity on user experience and consumers' willingness to buy in retail environment. The study indicated that AR technology significantly shapes user experience, and subsequently influences user satisfaction and user's willingness to buy. Additionally, they found that AR-enriched user experience provided users with more 3D product information, which enhanced user perception of reality (Poushneh & Vasquez-Parraga, 2017).

The current study aims to examine how interactive technology features incorporated in the shopping environment influence the emotional and cognitive experience, and shopping behavioral intentions of customers with different degrees of hedonic and utilitarian motivations (

Figure 1-1).

Figure 1-1 Study Framework

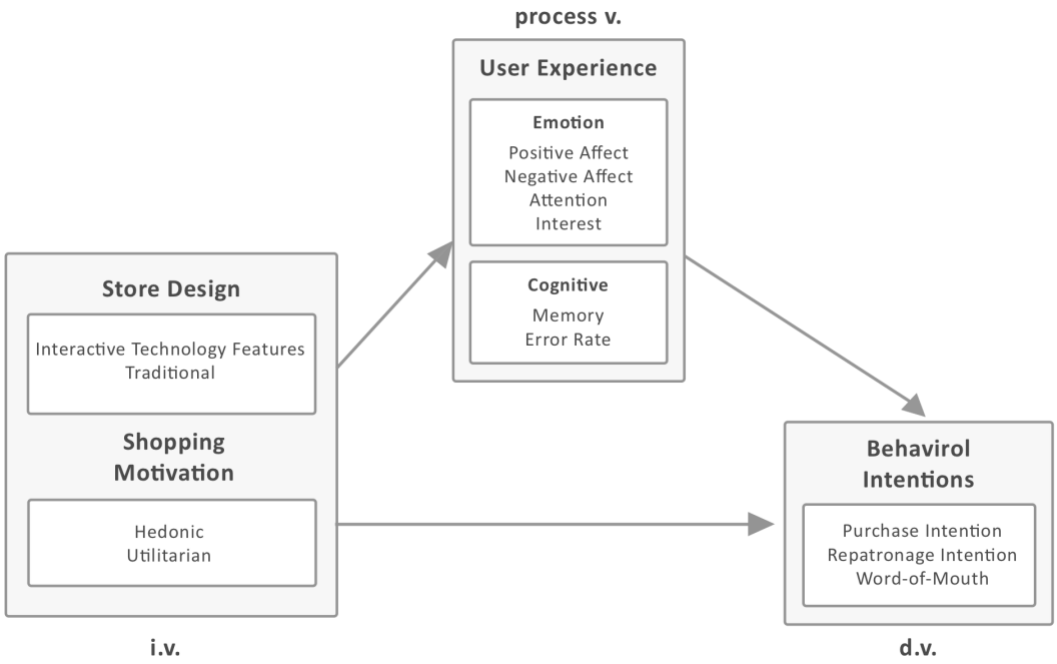


Methods

Design

A between-subjects experiment was used to examine the effect of interactive technology features in the sporting retail environment with two scenarios: one with interactive technology features, the other without those features. Sporting retail was chosen for gender neutral characteristic as the context. In the between-subjects design, one subject responded to only one virtual store environment between the two environments to avoid learning effect. Figure 2-1 illustrates the design of the study. Within the study, dependent variables were the users' emotional and cognitive experience (positive/negative affect and how well they remember the products in the store) and shopping behavior intention (purchase intention, repatronage intention, and word-of-mouth).

Figure 2-1 Study Framework 2



Participants

A total of 61 subjects participated the study. To control for the possible effect of gender and design background, participants were evenly divided between male and female, as well as design and non-design background when assigning the environment. 32 participants (44% male, 56% female) experienced high-tech virtual condition, and 29 participants (42% male, 58% female) experienced traditional virtual condition. The sample includes undergraduate and graduate students from different major at Cornell University. Participants were recruited from various majors, such as interior design, landscape architecture, mechanical engineering, computer science, art history, public administrations, animal science, etc. Participants ranged in age from 18 to 36 years old, $M=22.03, SE=.40$. Recruiting was conducted through poster and social media, and participants were compensated with either a $5 Amazon e-gift card or extra credit in participating a freshman level design studio class.

Virtual Sports Retail Environments

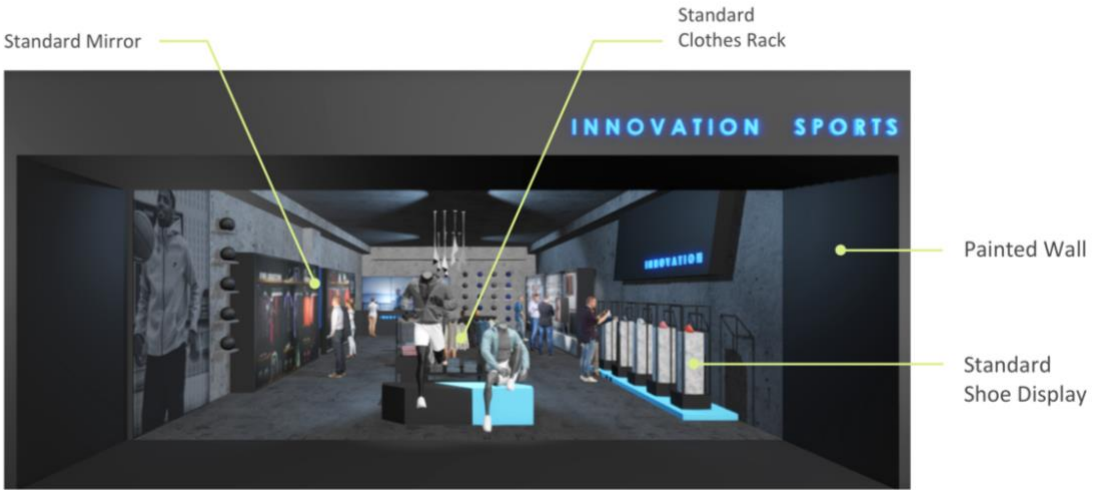
Advanced 3D computer graphics, as an economical and efficient tool, have been widely applied to simulate and substitute real-world experience in various areas, such as educational training, technical training, medical treatments, design prototyping, and entertainment (Yoon, Choi, & Oh, 2015). In this study, a 3D gaming engine, Unity 3D, was used to build the interactive virtual sports retail environments. Two virtual environments were created for the study, a high-tech sports retail environment and traditional sports retail environment. Both environments were built and animated in Unity 3D with ambient shopping mall noise and in-store sound. The stores were designed based on existing retail stores of sporting brands in big

shopping malls, dimensions and common design elements were identified, including sports products, advertisement posters, mannequin, clothing racks, dressing mirror, and cashier.

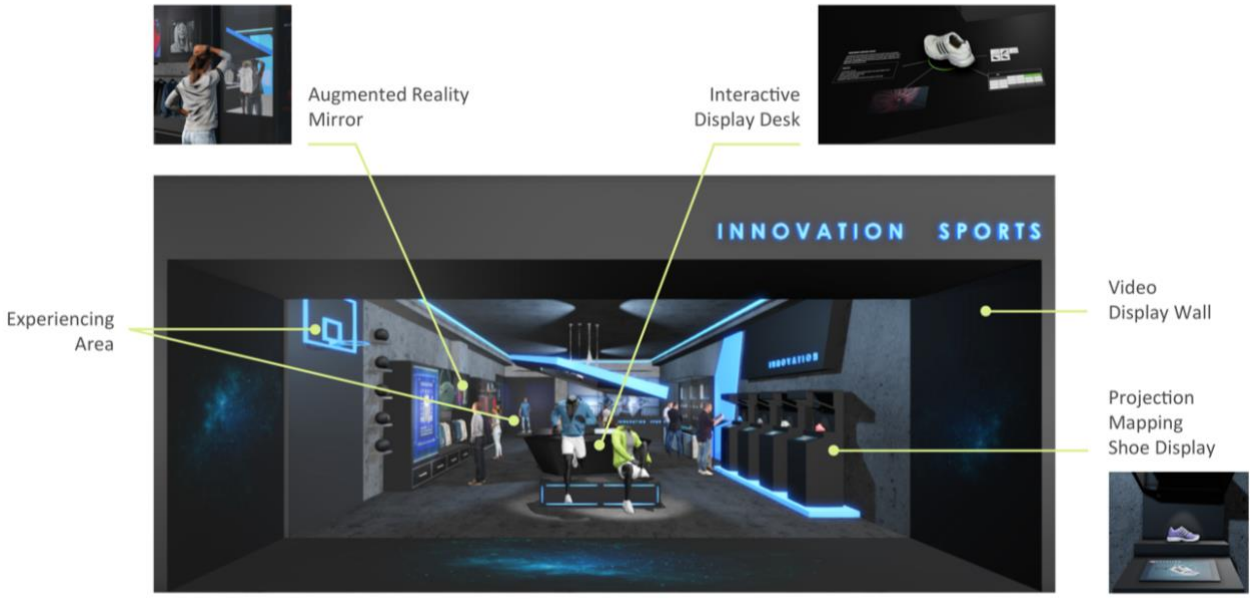
Three interactive technology features were incorporated in the high-tech store environment: projection mapping technology for a shoe stand, interactive display table, and augmented reality mirror (Figure 2-2, 2-3).The interactive display table displays product information of the product put on the surface, inspired by the existing model advertised in Nike Gangnam footwear store. The projection mapping shoe stand, inspired from NikeID, projects customized color and pattern onto real shoes. The augmented reality mirror allows consumers to try on cloth virtually with gestures.

Additionally, the high-tech store features experiencing area, such as treadmill and basketry. Beyond the specific technology features, the rest of the two store environments were kept consistent in terms of scale, merchandise, materiality, and aesthetic style.

Figure 2-2 Two sporting retail environment created for the study



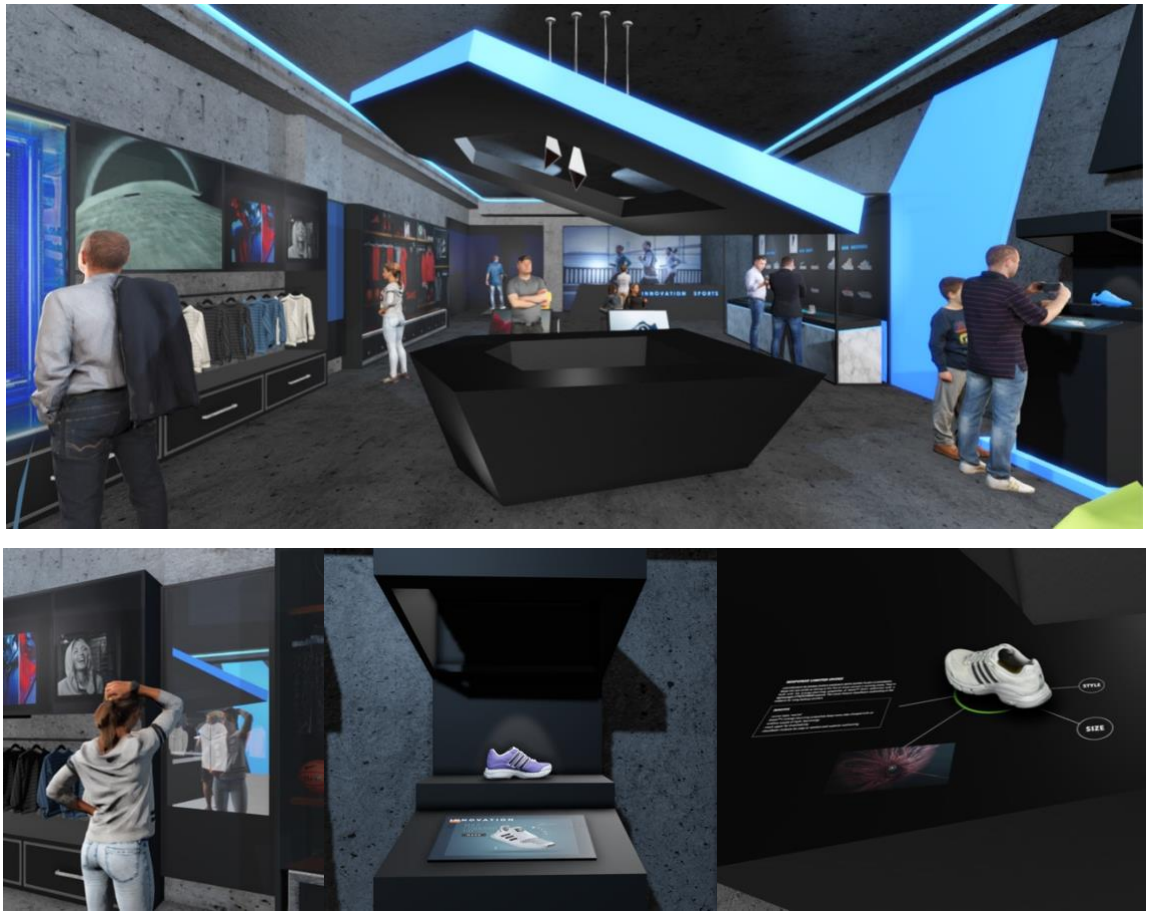
Traditional store condition



High-tech store condition

Figure 2-3 Details of the two store environments

Traditional store condition



High-tech store condition

Apparatus/Setting

The experiment was conducted in the DUET Lab (Design for User Experience with Technology) at Cornell University. Participants were invited to sit on a comfortable chair in front of a 65" 4K resolution screen display (LG 65UF9500). A headset (Bose QC25) was used to block out noise for the immersive experience. Once the participants were comfortable and ready, they were asked to view the walkthrough simulation on the screen.

Procedure

Participants were recruited via poster, email, and recommendations. Every experiment took approximately 15 minutes in average. Participants were allowed to choose which day and time they would participate through an online sign-in system. Upon arrival, the participants were educated on the purpose of the research, and asked to sign a consent form to agree on voluntary participation (See Appendix A). The first set of instrument (pre-questionnaire) (See Appendix B) was administered to understand participants' demographic information, shopping style, and product involvement. Then, they were moved to the designated seating location, situated 4-feet away from the screen display (Figure 2-3).

While seated in front of the screen display, participants were told to imagine that they were in a big shopping mall in Manhattan, NYC. The camera path was fixed for both simulations, so participants had no control over their shopping route. Restricting participants' interactive navigation provides all participants with the same experience, what to see and how long to stay, which allows the study to focus solely on the same detailed-designed area in comparison of two environments rather than interaction. Participants had around 4 minutes to experience the store, and the camera would stop at the same 6 places for 5 to 6 seconds. As soon

as the participants finish the store visit, another set of instruments (post-questionnaire) (See Appendix C) was administrated to understand their emotional and cognitive experience, and behavioral intentions.

At the end of the study, participants were allowed to ask any question about the study or the simulation after a debriefing session. Then, a $5 Amazon gift-card or extra was awarded to each participant.

Figure 2-4 Participant using Display Screen

Measures

Shopping Motivation

The Hedonistic and Utilitarian Shopping Values scale (HUSV) was adopted to measure individual shopping values (Kim, 2006). The hedonic shopping motivation refers to an emotionally satisfying positive shopping experience regardless of whether a purchase was made or not. In contrast, utilitarian aspect of consumer behavior was more of satisfying a functional or economic need (Babin et al., 1994). Hedonic shopping motivation scale captures the hedonic fulfillment experienced through shopping, consisting of 18 items, 3 items each for 6 different motivations: adventure shopping, gratification shopping, role shopping, value shopping, social shopping, and idea shopping, as identified by Arnold and Reynolds (2003). Adventure shopping indicates shopping for excitement, adventure, and stimulation of senses while experiencing a different environment. Gratification shopping means shopping to make oneself feel better. Role shopping refers to the satisfaction of shopping for others. Value shopping refers to the excitement of searching for discounts and sales. Social shopping refers to gaining social benefits through shopping with friends and family. Idea shopping refers to shopping to gather information about new trends, fashions, and products. In terms of utilitarian motivation, Kim (2004) found two dimensions: efficiency and achievement, adapting from scales created by Babin et al. (1994) Efficiency refers to the need of saving time and resources, and achievement refers to the goal of finding specific products from the plan made prior to the shopping trip.

The final HUSV scale contains 18 items for hedonic shopping motivation ($\alpha = 0.88$) and 6 items for utilitarian shopping motivation ($\alpha = 0.67$). Each item is scored on a 7-point Likert scale, where 1 = strongly disagree and 7 = strongly agree.

Product Involvement

Product involvement is a person's motivational state (i.e. arousal, interest, drive), activated by the relevance or importance of an object, towards the object (Mittal 1989). Consumers' product involvement is measured by the product involvement scale. Items such as how interested users are in sports related products, including sportswear, sports shoes, and sports accessories are asked using the Revised Personal Involvement Inventory (RPII) scale. The RPII scale was developed based on ten items of 7-point semantic differential scales (α =0.93), which was validated by MaQuarrie & Munson (1992), adopted from Zaichkowsky (1985). The PI scale used in this study contained subscales measuring two components of involvement: perceived importantance and interest. In this study, users' level of product involvement on sports merchandise was collected as a controlled variable.

Emotional User Experience

The Positive and Negative Affect Scale (PANAS) was used to measure participants' emotional perception (Watson et al., 1988). Briefly, Positive Affect (PA) reflects a person's feeling of enthusiastic, active, and alert. High PA is a state of high energy, full concentration, and pleasurable engagement. In contrast, Negative Affect (NA)is a general dimension of subjective distress and un-pleasurable engagement, including anger, contempt, disgust, guilt, fear, and nervousness. These two factors represent affective state dimensions.

The scale consists of 20 items (single-word adjectives) 10 each for PA and NA. Each item is scored on a 5-point scale. Coefficient alpha estimates of reliability are 0.93 for PA and 0.89 for NA if getting rid of 3 items: Jittery, Nervous, Hostile.

Wei and Lu proposed the AIDMSAS (Attention, Interest, Memory, Search, Action, and Share) model, which described the psychological processes involved in consumers' purchasing

behavior, in media market. They combined AIDMA (Attention, Interest, Desire, Memory, and Action) model by Hall (1924) and the AISAS (Attention, Interest, Search, Action and Share) model by Dentsu, a Japanese advertising agency (2008). Within the psychological processes, attention is the first step, and consumer's interest in the product or environment arouses is gained after attention (Sumita & Isogai, 2009). In this study, 3 times from attention sub-scale and 3 items from interest sub-scale are extracted from the AIDMSAS scale in order to measure consumer's emotional experience.

Cognitive User Experience

3 items from memory sub-scale is separated from the AIDMSAS model to measure participant's cognitive experience within consumers' psychological processes in making purchasing behavior. Higher score indicated participants could memorize the environment more.

While measuring user experience, high error rate refers to low usability (Nielsen, 1994). Error rate in this study measures whether participant could recall that an item appeared in the store or not. High error rate indicates low memory rate of the product.

Behavioral Intention

Multiple instruments were used to measure behavioral intentions. First instrument was adapted from Wei and Lu's AIDMSAS model (Wei & Lu, 2013). 3 items from desire sub-scale, 3 from action, 3 from share, 3 from memory and 3 from search were adopted from AIDMSAS model.

Purchase intention scale measures the likelihood that a consumer will buy a product, which also refers to willingness to buy (Dodds, Monroe, & Grewal, 1991; Grewal, Monroe, &

Krishnan, 1998). This scale is combined with share sub-scale of the AIDMSAS model to measure consumer's willingness to purchase.

Repatronage intention was measured by a validated three-item scale by Hess, Ganesan, and Klein (2003) the degree to which a customer expects visit a particular business in the future and continue to relationship indefinitely.

As a sub-scale of behavioral intention, three items from a validated Word-of-Mouth Likelihood (Alexandrov, Lilly & Babakus, 2013), and three items from a validated Word-of-Mouth Likelihood (Negative) (Wolter & Cronin, 2016), were used to measure consumers' expressed likelihood of recommending a brand or experience to others, particularly those who ask for advice, and consumers' inclined to complain about a specific entity to other people. This scale is combined with share sub-scale of AIDMSAS model to measure participants' word-of-mouth. All the items measuring behavioral intention are scored on a 7-point Likert scale, where 1 = strongly disagree and 7 = strongly agree, was used for the scoring.

Hypotheses

Hypotheses for two studies were formulated. Study 1 was proposed to understand the impact of interactive technology features in the sporting goods store on customers' experience and shopping behavioral intentions. Study 2 was designed to understand whether this impact differs depending on customers' shopping motivations.

Study 1: The effect of interactive technology features on customer experience.

Hypothesis 1: Interactive technology features will have significant effects on customers' emotional and cognitive experience.

Hypothesis 2: Interactive technology features will have significant effects on customers' shopping behavioral intentions.

Study 2: Customer experience of interactive technology features influenced by hedonic or utilitarian shopping motivation

Hypothesis 3: Interactive technology features will have a greater effect for hedonic shoppers than utilitarian shoppers on their emotional and cognitive experience.

Hypothesis 4: Interactive technology features will have a greater effect for hedonic shoppers than utilitarian shoppers on their shopping behavioral intentions.

Analysis and Results

Data Screening

Prior to the analysis, all variables were examined using JMP for the accuracy of data entry. All 61 cases remained in this analysis, since no multivariate outliers were detected. Characteristics of this sample are presented in Table 3-1, descriptive statistics on individual variables are presented in Table 3-2, and the descriptive statistics on process and outcomes variables under two store conditions are presented in Table 3-3. T-test (table 3-4) was performed to compare whether the average difference between two groups were significant or if its due to random chance.

Table 3-1

Descriptive statistics on individual characteristics variables

Demographic Variables		N (61)
Gender	Female	35
	Male	26
Ethnic	White	13
	Black/African American	2
	Black/African American	0
	Asian	42
	Natve Hawaiian/Pacific Islander	1
	Other	3
Culture	Western	28
	Eastern	33

Table 3-2

Descriptive statistics on individual characteristics variables

	Hedonic Shopping Motivation	Utilitarian Shopping Motivation	Product Involvement
N	61	61	61
Mean	4.81	5.2	3.16
Std. Deviation	0.93	0.85	1.16
Variance	0.87	0.72	1.34
Skewness	-0.93	0	0.33
Kurtosis	0.88	-0.27	0.09

Table 3-3

Descriptive statistics on process and outcome variables for two conditions (Tech: with interactive technology features, Trad: without interactive technology features)

	N		Mean		Std. Deviation		Variance		Kurtosis		Kurtosis	
	Tech	Trad	Tech	Trad	Tech	Trad	Tech	Trad	Tech	Trad	Tech	Trad
Positive affect	32	29	3.12	2.74	0.87	0.96	0.76	0.93	-0.12	0.06	-0.02	-0.73
Negative Affect	32	29	1.15	121	0.33	0.46	0.11	0.22	3.62	2.44	15.61	5.49
Attention	32	29	5.32	4.86	1.21	1.04	1.46	1.08	-0.59	0.04	-0.39	0.37
Interest	32	29	5.13	4.79	1.14	1.18	1.29	1.4	-0.77	-0.37	-0.09	0.83
Memory	32	29	5.35	5.16	1.28	0.85	1.63	0.73	-1.33	-0.42	1.36	-0.82
Error Rate	32	29	0.48	0.32	0.19	0.2	0.04	0.04	-0.49	-0.14	-0.14	-1.01
Purchase Intention	32	29	5.09	4.84	0.85	0.78	0.73	0.61	-1.88	-1.13	5.44	3.36
Repatronage Intentino	32	29	5.28	4.8	0.95	1.13	0.91	1.27	-0.15	-0.55	-0.09	0.23
Word of Mouth	32	29	5.37	5.19	1.16	0.78	1.34	0.61	-1.55	-0.09	3.38	0.05

Table 3-4

t-Test result table

Variables	Techy	Traditional	t-Ratio	p
	Mean (SD)	Mean (SD)		
Positive Affect	3.12 (.87)	2.74 (0.96)	-1.6	0.11
Negative Affect	1.15 (.33)	1.22 (.46)	0.57	0.57
Attention	5.32 (1.21)	4.86 (1.04)	-1.6	0.11
Interest	5.13 (1.14)	4.79 (1.18)	-1.11	0.27
Memory	5.35 (1.28)	5.16 (.85)	-0.7	0.49
Error Rate	**0.48 (.19)**	**0.32 (.20)**	**-3.19**	**0.002***
Purchase Intention	5.09 (0.85)	4.84 (0.78)	-1.20	0.23
Repatronage Intention	5.28 (0.95)	4.80 (1.13)	-1.77	0.08
Word of Mouth	5.37 (1.16)	5.19 (0.78)	-0.69	0.49

***p<.001, *p<.05*

Reliability and Validity

The internal consistency of the scales was assessed using JMP to calculate the Cronbach's alpha of each sub-scale. Internal consistency reliabilities vary from a minimum of 0 to a high of 1.0. These scores represent the proportion of the variance in the respondent's scores attributed to true differences on the scale (DeVellis 1991). DeVellis recommends an alpha below .60 as unacceptable; .60-.65 undesirable; .65-.70 minimally acceptable; .70-.80 respectable; .80-.90 very good; and if much above .90 excellent and potentially provides an opportunity for the researcher to shorten the scale.

In order to refine the original scale, individual-to-total reliability was examined for each sub-scale. If any individual question reduced the total reliability (Cronbach Alpha) substantially, that question was removed from the scale. For the utilitarian shopping motivation scale, 2 efficiency items (item 5 and 6) were excluded to improve the scale reliability. 3 items (item 15, 16 and 20) were deleted from the PANAS scale. 3 share items and 3 search items (item 7, 8, 9, 18, 19 and 20) were dropped from the AIDMSAS scale. The summaries of the omitted questions are presented in Table 3-6, Table 3-7 & Table 3-8. The action subscale of AISMSAS was combined with purchase intention scale to measure the construct of purchase intention under behavioral intention, as the two measures were highly correlated, The share subscale of AISMSAS was combined with word-of-mouth scale to measure the construct of word-of-mouth under behavioral intention for the same reason.

Table 3-5

Reliability test results

Constructs	No. of Cases	No. of Items	Cronbach's Alpha
Hedonic Shopping Motivation	61	18	0.88
Utilitarian Shopping Motivation	61	4	0.68
Product Involvement	61	10	0.93
Positive Affect	61	10	0.93
Negative Affect	61	7	0.89
Attention	61	3	0.79
Interest	61	3	0.87
Memory	61	3	0.80
Purchase Intention	61	9	0.78
Repatronage Intention	61	3	0.84
Word of Mouth	61	8	0.74

Table 3-4 indicates the results of reliability tests conducted for all the instruments used in this study. Except for the utilitarian shopping motivation variable, the Cronbach alpha (reliability coefficient) value on each of the 10 variables were above the respectable level of .70 (Cronbach 1951; Nunally 1978) The utilitarian shopping motivation were in the minimally acceptable level .60 (DeVellis 1991). Therefore, all scales used in the study were internally consistent and reliable measures of the associated constructs.

Table 3-6

Dropped items from Hedonic and Utilitarian Shopping Motivation scale

HUSM	Dropped Items from Hedonic and Utilitarian Shopping Motivation Scale
HUSM5	5. It is disappointing when I have to go to multiple stores to complete my shopping.
HUSM6	6. A good store visit is when it is over very quickly.

Table 3-7

Dropped items from Positive Affect and Negative Affect scale

PANAS	Dropped Items from Positive Affect and Negative Affect Scale
PANAS15	15. Jittery
PANAS16	16. Nervous
PANAS20	20. Hostile

Table 3-8

Dropped items from AIDMSAS scale

AIDMSAS	Dropped Items from AIDMSAS Scale
AIDMSAS7	7. After looking around the store, I think I need the merchandise.
AIDMSAS8	8. After looking around the store, I want to have the merchandise.
AIDMSAS9	9. After looking around the store, I hope I can get the merchandise.
AIDMSAS18	18. After looking around the store, I think I will search for information about the merchandise.
AIDMSAS19	19. After looking around the store, I think I will search for online word-of-mouth about the merchandise.
AIDMSAS20	20. After looking around the store, I think I will compare prices of the merchandise on internet.

Study 1: The effect of interactive technology on customer experience

Hypothesis 1: Interactive technology features in the sporting goods store will have significant effects on customers' emotional and cognitive experience.

Hypothesis 1a: Participants in the high-tech store condition will report a higher level of positive affect than participants in the traditional store condition do.

Hypothesis 1b: Participants in the high-tech store condition will report a lower level of negative affect than participants in the traditional store condition do.

Hypothesis 1c: Participants in high-tech store condition will report a higher level of cognitive attention than participants in traditional store condition do measured by recall test.

Hypothesis 1a, 1b, and 1c predict that interactive technology features would lead to higher level of positive affect (1a), lower level of negative affect (1b), and higher level of cognitive attention on product (1c). In order to test the hypotheses, t-test and multiple linear regression were conducted.

The scales with a significant p-value indicated that store design had a significant impact on the scale. T-test results suggested that difference in the store design significantly affected error rate, but the influence on rest of the variables were not significant. As seen in figures 4-1 and 4-2, interactive technology features had a positive influence on the positive affect, attention, and interest. As seen in figure 4-1, interactive technology features had a negative influence on negative affect, and in figure 4-3, interactive technology features also had a negative influence on customers' cognitive attention on products, measured by error rate of recall test. Additionally

from figure 4-4, interactive technology features had a positive affect on customer's cognitive attention on the store, measured by memory score.

Figure 4-1

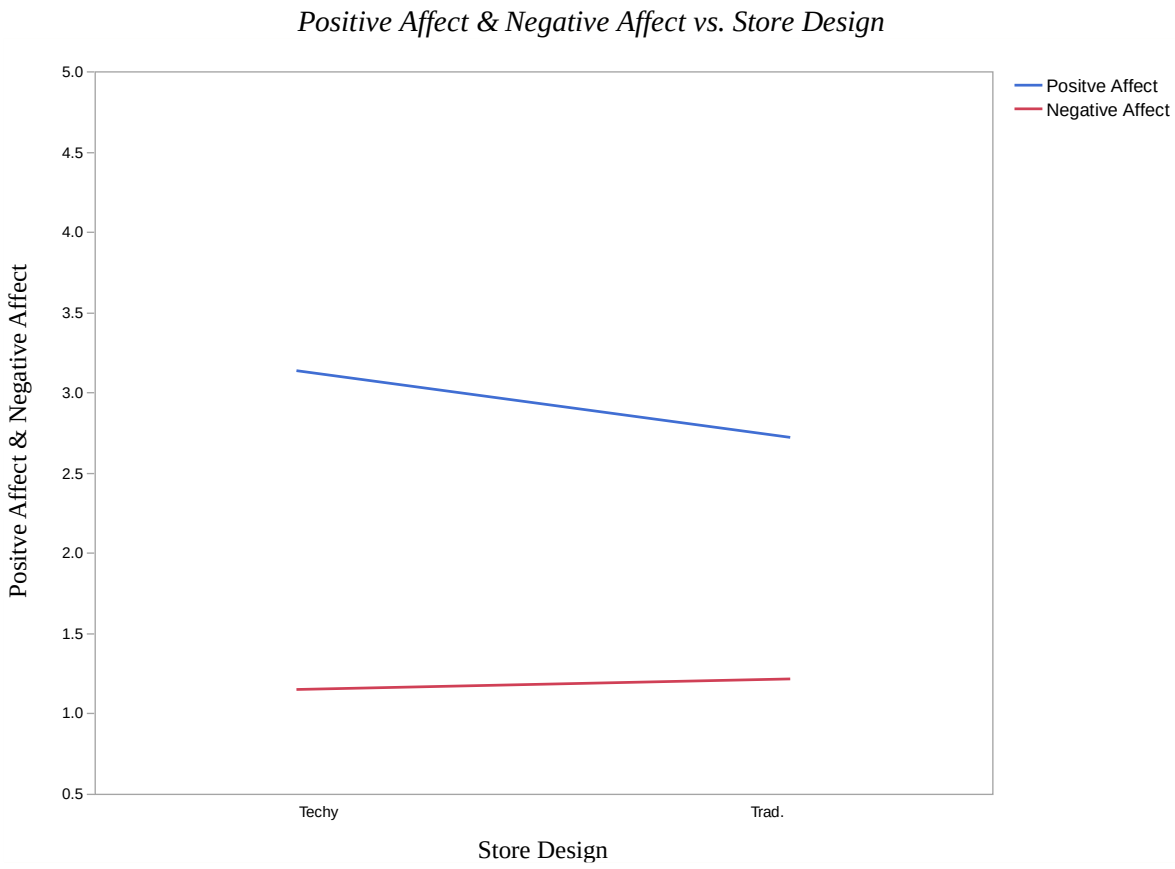


Figure 4-2

Attention & Interest vs. Store Design

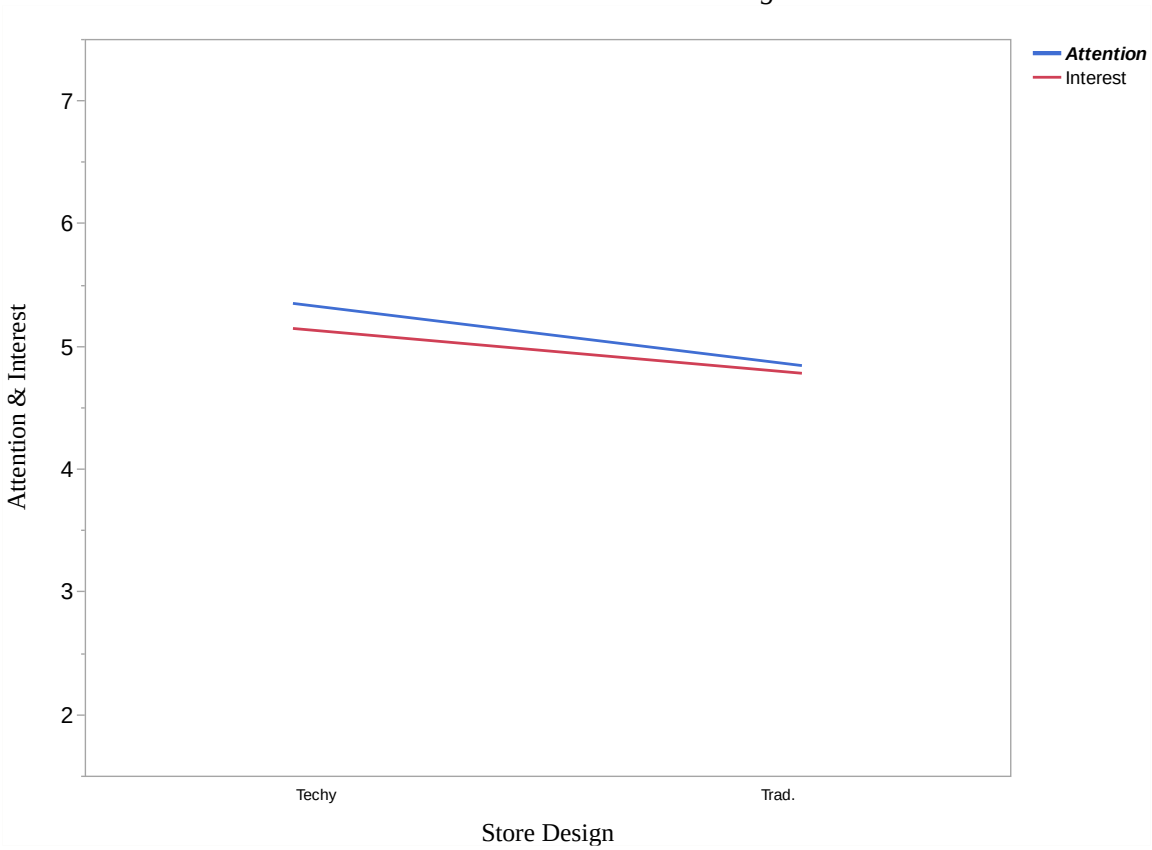


Figure 4-3

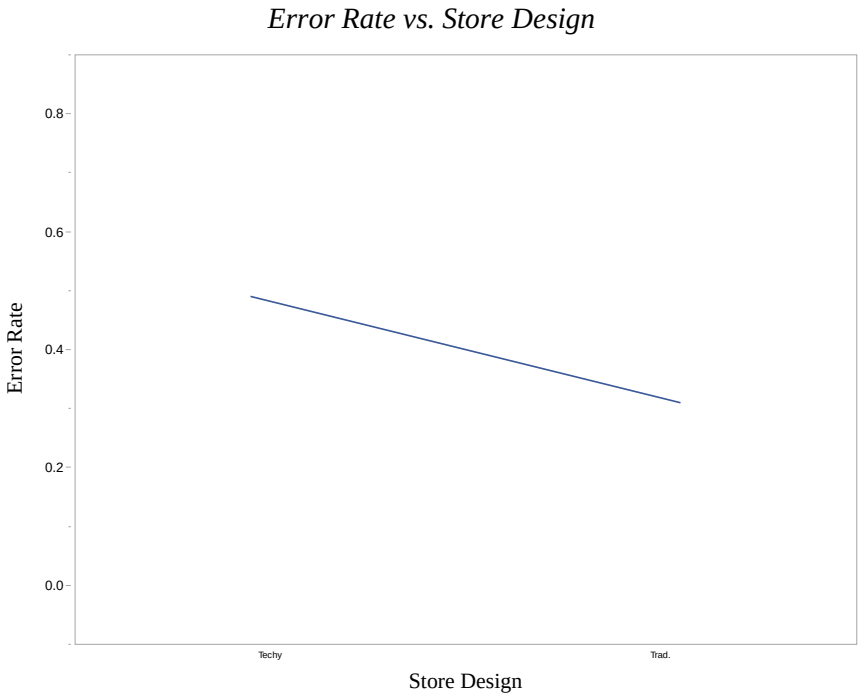
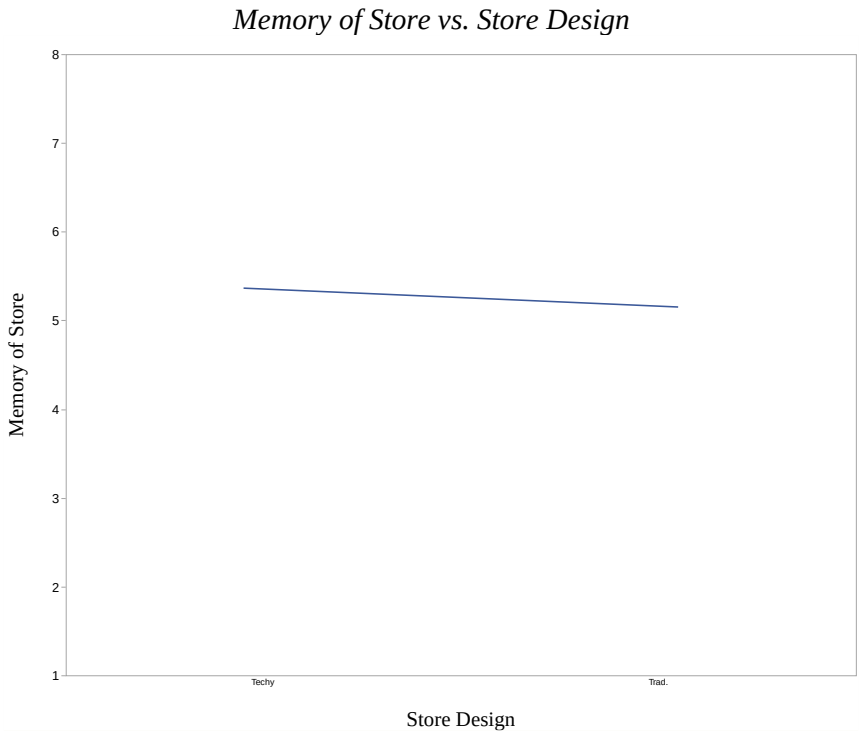


Figure 4-4



Regression analysis allow us to test a pattern of variables to predict the influence of a treatment. Multiple linear regression analysis was used to develop models for predicting customers' positive affect and interest from store design and customers' product involvement, using effective coding for store design (table 4-1). After controlling for product involvement, the result showed no significant effect of store design (high-tech store condition) on both customers' positive affect (B = 0.17, t (58) = 1.52, p = .133) and interest (B = 0.15, t (58) = 1.01, p = .317).

Table 4-1

Multiple regression results using effective coding for store design

	Positive Affect R = .10			Interest R = .10		
IVs	B	t	p	B	t	p
Store Design [High-tech]	0.17	1.52	.133	0.15	1.01	.317
Product Involvement	-0.19	-1.93	.059	-0.29	-2.29	.026*

***p<.001, *p<.05*

Same regression analysis was also used to develop a model for predicting customers' negative affect from store design, customers' age, and product involvement (table 4-2). However, the model was not significant after controlling for age and product involvement. After removing the effect of store design, customers' product involvement significantly predicted negative affect (B = 0.10, t (58) = 2.32, p = .024), as higher product involvement was associated with higher level of negative affect.

Table 4-2

Multiple regression result using effective coding for store design

	Negative Affect R = .10			
IVs	B	β	t	p
Age	0.02	0.16	1.27	.159
Product Involvement	0.10	0.29	2.32	.024*

***p<.001, *p<.05*

Multiple linear regression analysis was used to develop a model for predicting customers' cognitive attention on products measured by error rate from store design, customers' age, and their product involvement, using effective coding foe store design (table 4-3). After controlling for product involvement and age, store design (high-tech store condition) significantly predicted customer's error rate (B = 0.09, t (57) = 3.20, p = .002).

Table 4-3

Multiple regression result using effective coding for store design

	Error Rate R = .15			
IVs	B	β	t	p
Store Design [High-tech]	0.09	0.40	3.20	.002*
Age	-0.005	-0.07	-0.53	.599
Product Involvement	0.003	0.02	0.15	.880

***p<.001, *p<.05*

In summary, the results from t-test supported H1a and H1b that participants in the Interactive technology store condition would report a higher level of positive affect and a lower level of negative affect than participants in the traditional store condition do. Nonetheless, the results from multiple linear regression suggested that store design did not significantly predict customers' positive affect when controlling for product involvement, and also did not significantly predict customers' negative affect when controlling for both age and product involvement. However, H1c was not supported by the t-test results, as participants in Interactive technology store condition reported a lower level of cognitive attention than participants in traditional store condition do measured by recall test. In addition, the multiple linear regression result indicated that store design significantly predicted customer's error rate when controlling for both age and product involvement.

Hypothesis 2: Interactive technology features in a sporting goods store will have significant effects on customers' shopping behavioral intentions

H 2a: Participants in the high-tech store condition will report a higher level of purchase intention than participants in the traditional store condition do.

H 2b: Participants in the high-tech store condition will report a higher level of patronage intention than participants in traditional store condition do.

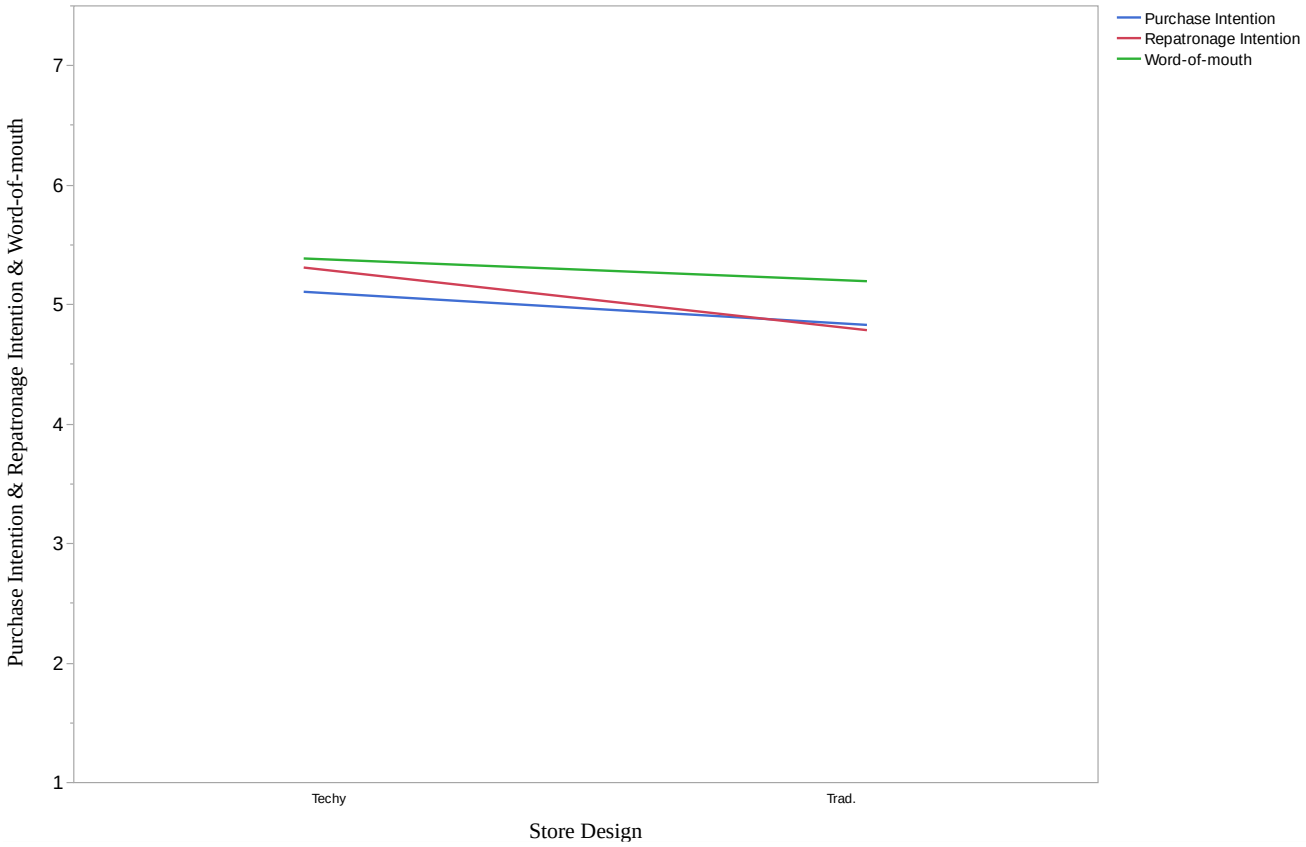
H 2c: Participants in the high-tech store condition will report a higher rate of word-of-mouth than participants in the traditional store condition do.

Hypothesis 2a, 2b, and 2c predict that Interactive technology store condition would lead to higher level of purchase intention (2a), patronage intention (2b), and higher rate of word-of-mouth (2c). In order to test the hypotheses, t-test and multiple linear regression were conducted.

T-test results suggested that the effect of difference in the store design on customers' purchase intention, patronage intention, and word-of-mouth were not significant. However, as seen in figures 4-5, interactive technology features had a slight positive influence on customers' purchase intention, patronage intention, and word-of-mouth.

Figure 4-5

Purchase Intention & Repatronage Intention & Word-of-mouth vs. Store Design



Multiple linear regression analysis was used to develop models for predicting customers' purchase intention, repatronage intention, and word-of-mouth from store design, customers' age, and their product involvement, using effective coding for store design (table 4-4). After controlling for age and product involvement, the result showed no significant effect of store design (high-tech store condition) on customers' purchase intention (B = 0.09, t (57) = 0.89, p = .376), repatronage intention (B = 0.19, t (57) = 1.55, p = .128), and word-of-mouth (B = 0.05, t (57) = 0.37, p = .252).

Table 4-4

Multiple regression results using effective coding for store design

	Purchase Intention R=.21			Repatronage Intention R=.20			Word-of-mouth R=.17		
IVs	B	t	p	B	t	p	B	t	p
Store Design [Interactive technology]	0.09	0.89	.376	0.19	1.55	.128	0.05	0.37	.252
Age	0.02	0.71	.482	0.02	0.52	.606	0.02	0.60	.009*
Product Involvement	**-0.30**	**-3.57**	**.0007****	**-0.35**	**-3.19**	**.002***	**-0.33**	**-3.19**	**.002***

***p<.001, *p<.05*

In summary, the t-test results supported H2a, H2b, and H2c that participants in the Interactive technology store condition reported a higher level of purchase intention, repatronage intention, and word-of-mouth than participants in the traditional store condition do. However, the effect of store design was not significant. In addition, multiple linear regression analysis indicated that when controlling for customers' age and product involvement, Interactive technology store features in a sporting goods store did not significantly predict customs' purchase intention, repatronage intention, and word-of-mouth.

Study 2: Customer experience of interactive technology features influenced by hedonic or utilitarian shopping motivation.

Hypothesis 3: Interactive technology features will have a greater effect for hedonic shoppers than utilitarian shoppers on their emotional and cognitive experience.

H 3a: Participants with higher hedonic shopping motivations will report a higher level of positive affect in the high-tech store condition than in traditional store condition.

H 3b: Participants with higher hedonic shopping motivations will report a higher level of cognitive attention in the high-tech store condition than in traditional store condition.

After the initial t-test and linear regression analysis for hypotheses 1 and 2, the impact of the Interactive technology features in a sporting goods store on customers' user experience and behavioral intentions was analyzed. Based on our assumptions, there should be an impact of Interactive technology features in the sporting goods store on hedonic shopper's positive affect and cognitive attention. To address hypotheses H3a and H3b, simple linear models were developed (table 4-5).

According to table 4-5, figure 4-6, and figure 4-7, the results showed that in high-tech store condition, customers' positive affect (β = 0.25, $t(60) = 1.5$, $p = .14$) and attention (β = 0.12, $t(60) = 0.51$, $p = .61$) were less influenced by their hedonic shopping motivation than in traditional store condition.

Table 4-5

Regression analyses results of H3a and H3b

		IV : Hedonic Shopping Motivation				
	Process Variables	B	β	t	p	R^2
Techy	Positive Affect	0.25	0.26	1.5	0.14	0.07
	Attention	0.12	0.09	0.51	0.61	0.01
	Error Rate	-0.06	-0.27	-1.51	0.14	0.07
Traditional	Positive Affect	0.54	0.51	3.11	0.004*	0.26
	Attention	0.52	0.46	2.67	0.013*	0.21
	Error Rate	0.08	0.35	1.94	0.063	0.12

***p<.001, *p<.05*

Figure 4-6

The impact of hedonic shopping motivation on positive affect in two groups

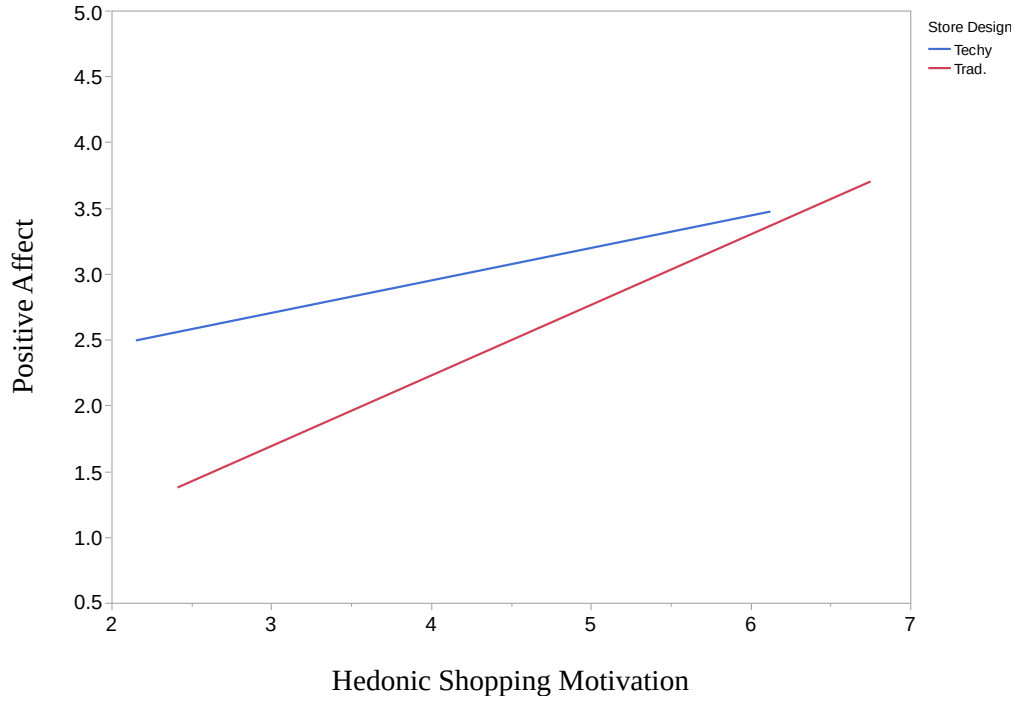


Figure 4-7

The impact of hedonic shopping motivation on attention in two groups

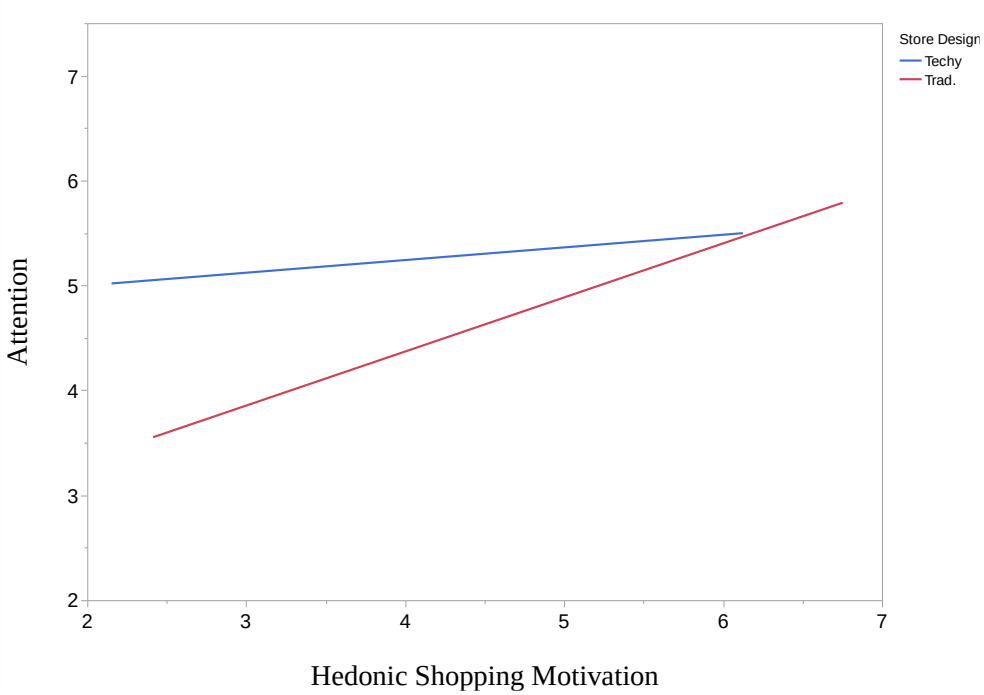
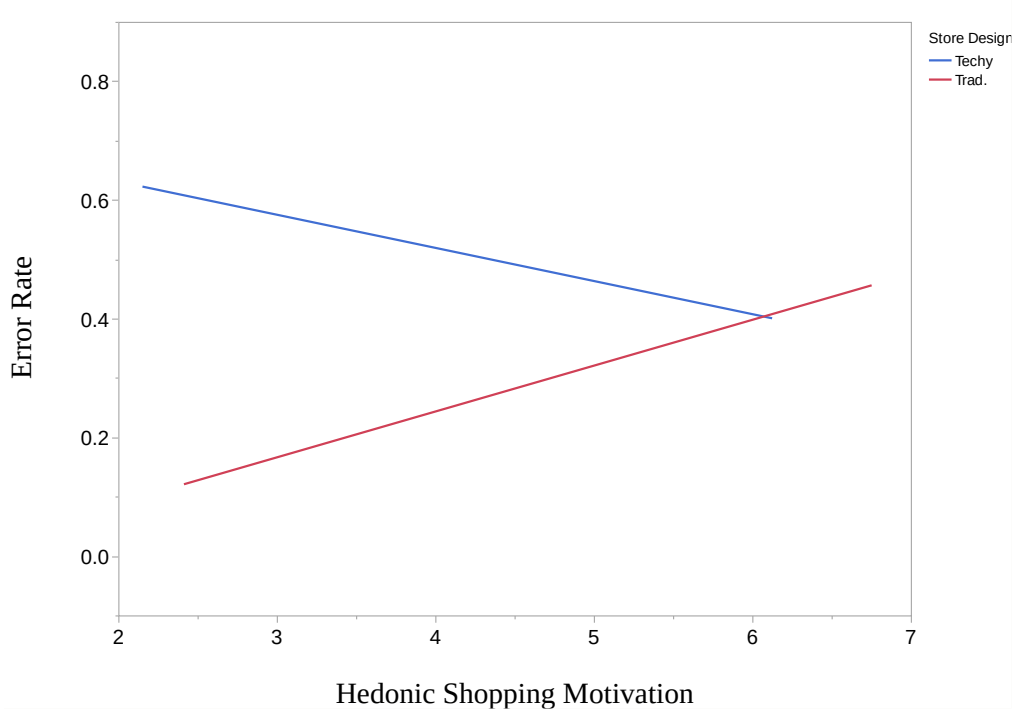


Figure 4-8 showed that the effect of hedonic shopping motivation on error rate depended on different store design. Specifically, shoppers with higher hedonic motivation made less errors on recalling products under Interactive technology store condition, but made more errors under traditional store design.

Figure 4-8

The impact of hedonic shopping motivation on error rate in two groups



To further understand the role of store design and hedonic shopping motivation in predicting customers' positive affect, multiple linear models were developed. In addition to the model used in H1, two other predictor variables, hedonic motivation and the interaction between store design and hedonic shopping motivation, were added to the previous model predicting customers' positive affect (table 4-6). When controlling for customers' age and product involvement, hedonic shopping motivation (B = 0.41, t (55) = 3.06, p = .004) significantly predicted customers' positive affect, as 1 increase in hedonic shopping motivation would result in a 0.41 increase in customers' positive affect.

Table 4-6

Multiple regression result using effective coding for store design

	Positive Affect R = .25			
IVs	B	β	t	p
Store Design[Interactive technology]	0.20	0.22	1.82	.073
Hedonic Motivation	0.41	0.41	3.06	.004*
Age	0.05	0.18	1.42	.162
Product Involvement	-0.07	-0.09	-0.69	.495
Store Design [Interactive technology] * Hedonic Motivation	-0.16	-0.16	-1.37	.176

***p<.001, *p<.05*

In terms of error rate, a new model for predicting customers' error rate from store design, hedonic shopping motivation age, product involvement, and the interaction between store design and hedonic shopping motivation was developed in addition to model used in H1. According to the result table 4-7, when controlling for customers' age and product involvement, store design (B = 0.08, t (55) = 3.30, p = .002) and the interaction effect of store design and hedonic shopping motivation (B = -0.07, t (55) = -2.37, p = .021) significantly predicted customers' error rate. The overall R^2 was .46, indicating that approximately 46% of the change of variance in customers' positive affect could be explained by these predictor variables.

Table 4-7

Multiple regression result using effective coding for store design

		Error Rate R = .23		
IVs	B	β	t	p
Store Design [Interactive technology]	0.08	0.40	3.30	.002*
Hedonic Motivation	0.01	0.04	0.31	.757
Age	-0.002	-0.04	-0.28	.779
Product Involvement	0.003	0.02	0.14	.889
Store Design[Interactive technology] * Hedonic Motivation	**-0.07**	**-0.28**	**-2.37**	**.021***

***p<.001, *p<.05*

Hypothesis 4: Interactive technology features in a sporting goods store will have a greater effect for hedonic shoppers on their shopping behavioral intentions.

H 4a: Participants with higher hedonic shopping motivations will report a higher level of purchase intention in the high-tech store condition.

H 4b: Participants with higher hedonic shopping motivations will report a higher level of repatronage intention in the high-tech store condition.

H 4c: Participants with higher hedonic shopping motivations will report a higher rate of word-of-mouth in the high-tech store condition.

Except for emotional and cognitive experience, there should be an impact of interactive technology features in the sporting goods store on hedonic shopper's shopping behavioral intentions, such as purchase intention (H4a), repatronage intention (H4b), and word-of-moth (H4c). In order to test the hypotheses, simple linear models were developed (Table 4-8).

According to table 4-8, and figure 4-9 through 4-11, the results showed that in high-tech store condition, customers' purchase intention (β = 0.23, $t(60) = 1.27$, $p = .22$), repatronage intention (β = 0.18, $t(60) = 1.01$, $p = .32$), and word-of-mouth (β = 0.25, $t(60) = 1.41$, $p = .17$) were less influenced by their hedonic shopping motivation than in traditional store condition, and higher hedonic shopping motivation was correlated with higher purchase intention, repatronage intention, and word-of-mouth.

Table 4-8

Regression analyses of hedonic shopping motivation on behavioral intention in both store design conditions.

		IV: Hedonic Shopping Motivation				
	Dependent Variables	B	β	t	p	R^2
Techy	Purchase Intention	0.21	0.23	1.27	0.22	0.05
	Repatronage Intention	0.19	0.18	1.01	0.32	0.03
	Word of Mouth	0.31	0.25	1.41	0.17	0.06
Traditional	Purchase Intention	0.27	0.31	1.72	0.09	0.09
	Repatronage Intention	0.45	0.37	2.05	0.05	0.13
	Word of Mouth	0.48	0.57	3.62	0.001**	0.33

***p<.001, *p<.05*

Figure 4-9

The impact of hedonic shopping motivation on purchase intention in two groups

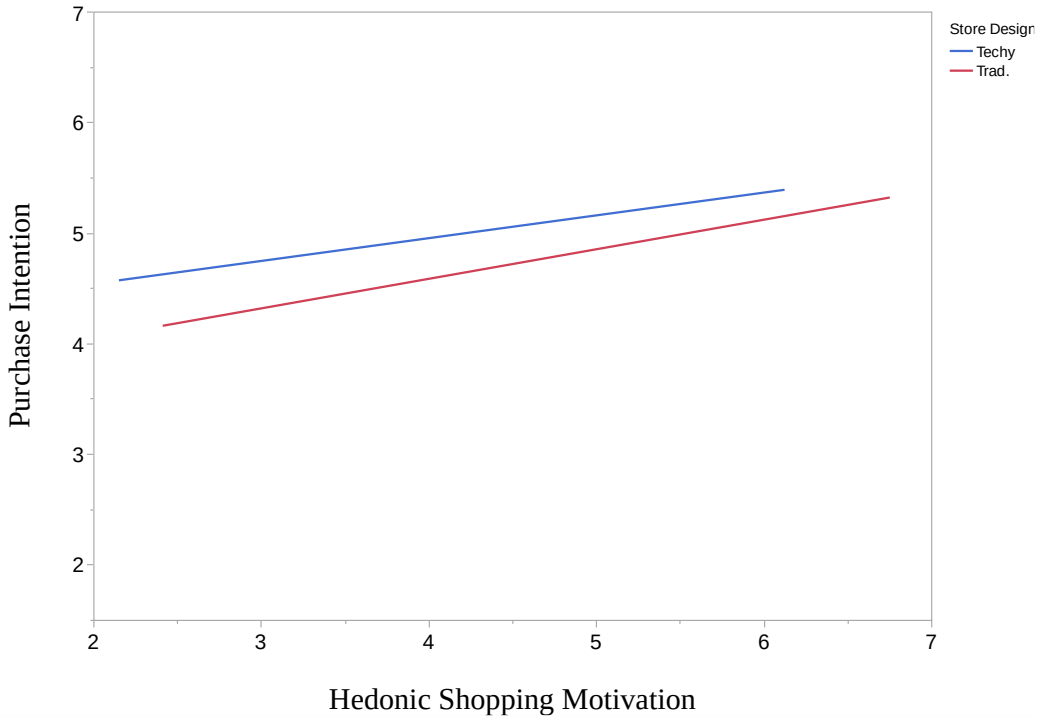


Figure 4-10

The impact of hedonic shopping motivation on repatronage intention in two groups

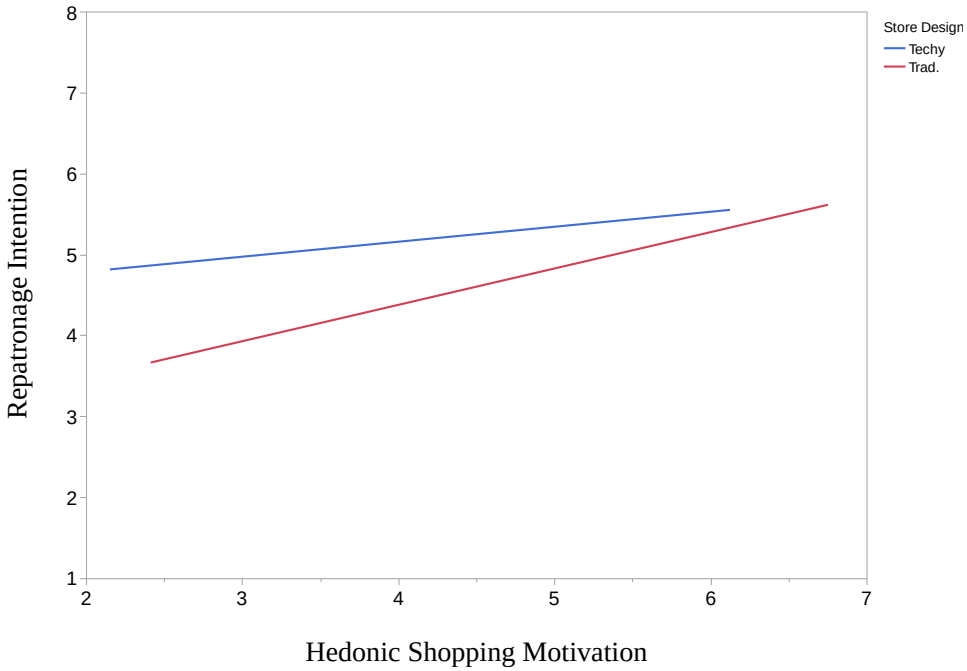
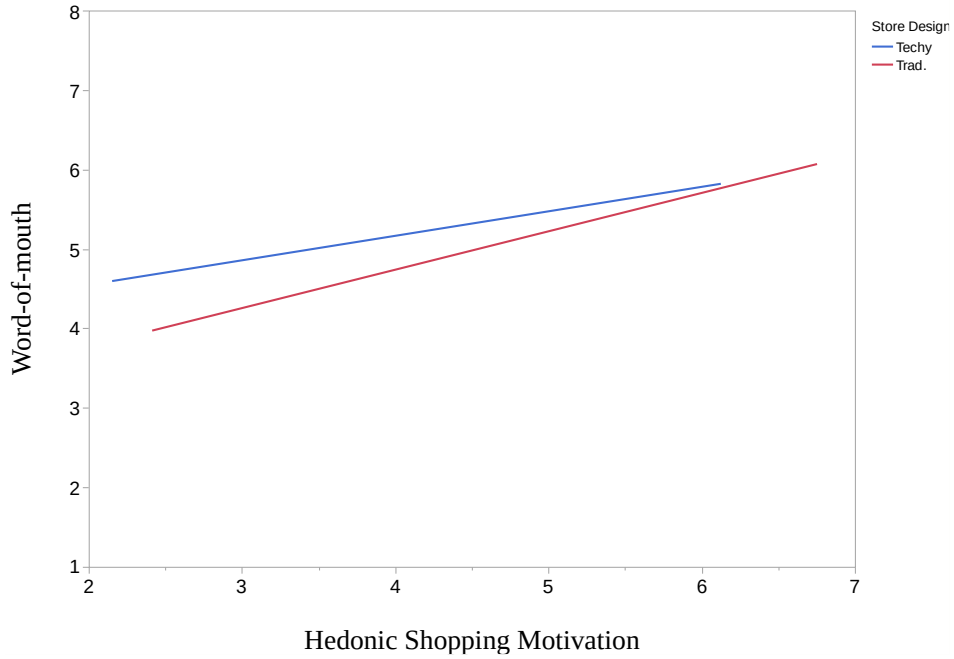


Figure 4-11

The impact of hedonic shopping motivation on word-of-mouth in two groups



To further understand the role of store design and hedonic shopping motivation in predicting customers' purchase intention, repatronage intention, and word-of-mouth, new multiple linear models were developed in addition to the models used in H2 (table 4-9). When controlling for customers' product involvement, store design could not predict customer's all three shopping behavioral intentions significantly. However, hedonic shopping motivation (B = 0.27, t (57) = 2.01, p = .049) became significant in predicting customers' word-of-mouth. According to all three models, product involvement was a significant variable in predicting customers' purchase intention (B = -0.27, t (57) = -3.04, p = .004), repatronage intention (B = -0.30, t (57) = -2.62, p = .011), and word-of-mouth (B = -0.26, t (57) = -2.39, p = .020).

Table 4-9

Multiple regression results using effective coding for store design

	Purchase Intention R^2 = .22			Repatronage Intention R^2 = .22			Word-of-mouth R^2 = .22		
IVs	B	t	p	B	t	p	B	t	p
Store Design[Techy]	0.12	1.25	.218	0.24	1.91	.061	0.11	0.90	.373
Hedonic shopping motivation	0.11	0.98	.332	0.17	1.18	.244	0.27	2.01	.049*
Product Involvement	-0.27	-3.04	.004*	-0.30	-2.62	.011*	-0.26	-2.39	.020*

***p<.001, *p<.05*

In summary, H4a, H4b, and H4c was supported by the results, as participants with higher hedonic motivations for shopping reported a higher level of purchase intention, repatronage intention, and word-of-mouth in the Interactive technology store condition. Store design and hedonic shopping motivation were not significant variables in predicting purchase intention and repatronage intention when controlling for customers' product involvement.

Discussion and Conclusion

This study provides a systematic understanding of the role of interactive technology features in the retail environment, and offers experimental insights for designers and retailers interested in implementing advanced interactive technology features to attract customers and to increase sales.

Study 1 examined the effect of the interactive technology features on customer's experience. The findings of the study show that interactive technology features in the sporting goods store have a positive effect on customers' emotional shopping experience. Specifically, participants in the high-tech store condition reported more positive affect and less negative affect scores than the traditional condition did. However, this study found that interactive technology features significantly weakened customers' cognitive experience, as participants made more error in remembering the displayed merchandise in the high-tech store condition. This finding implies that customers were attracted to the store by the interactive technology features but distracted by them when it comes to individual merchandizes in the store. Thus, retailers can take advantages of the interactive technology features to advertise the store or the brand as a whole instead of a specific product. In terms of behavioral intention, the study findings demonstrated that customer's purchase intention, repatronage intention, and word-of-mouth were all positively influenced by the interactive technology features in the sporting goods store. The greater emotional experience and behavioral intentions in the high-tech retail environment condition confirm that interactive technology features can enhance customers' positive shopping experience and potentially increase sales.

Study 2 looked at whether the effect of study 1 can be influenced by customers' hedonic or utilitarian shopping motivation. The findings of Study 2 support that hedonic shoppers'

emotional experience (i.e., positive affect and attention) was not as strong in the high-tech store condition compared to the traditional condition. This finding implied that interactive technology features can improve customers' emotional experience despite their hedonic shopping motivation. The analysis results also indicated that interactive technology features moderated the impact of hedonic shopping motivation on customers' cognitive attention. Specifically, there's a significant interaction effect between store design and hedonic shopping motivation on influencing participants' performance on remembering the displayed merchandise, measured by error rate: hedonic shopping motivation decreased error rate in the context of high-tech store condition. The study also found that customers' shopping intentions were not as strongly influenced by their hedonic motivation in the high-tech store condition compared to the traditional store condition. In other words, regardless of hedonic motivation levels, interactive technology features in the store can provide customers with higher shopping behavioral intention than traditional store do, which further supports the positive roles of interactive technology features into the sporting retail environment.

Though this study only collected data from college students, the participants were considered as "the shoppers of the future", who are aware of new technologies for shopping, and frequently involved in retail setting (Pantano & Di Pietro, 2012).

Additionally, though this study examined participants' behavioral intentions instead of actual shopping behaviors, when the interactive technology features successfully encourage customers to purchase, to visit the store again, or to recommend the store to others, there's a high probability that costumers will gain a more pleasant shopping experience and it will also result in increased sales. Additionally, the virtual simulations used in this study will provide researchers,

practitioners, and participants with a lifelike opportunity to examine their design proposals prior to implementation.

Limitation and Future studies

Due to limited experimenting time, 61 subjects participated the study, which might lead to type II error, as more observations could disinter more significant effect of the interactive technology features on customers' experience and shopping behavioral intentions.

Moreover, though the virtual store environments were well-designed and presented, nearly half of the participants were expecting more interaction with the technology features in the store during the debriefing session. Introduced by Steuer (1992), interactivity refers to the "extent to which users can participate in modifying the form and content of a mediated environment in real time." Limited level of the interactivity weakened users' ability to personalize information within the 3D virtual environment (Poushneh & Vasquez-Parraga, 2017). Thus, in the future study, a higher level of interactivity could be applied to the virtual environment. For example, head-mounted displays will allow users to experience the virtual reality with higher level of interactivity. Unity 3D game engine will also empower designer with a higher level of interaction, such as using keyboard to trigger display animations.

Additionally, Machleit and Eroglu found that mixing the conceptually separate emotions type into positive and negative could lead to a nonsignificant result in findings for an overall summary factor. The various effects of some distinct emotions might be compromised (Machleit & Eroglu, 2000). Thus, explorations of studies around a refined range of customers' emotional experience are needed to further understand the effectiveness of the interactive technology features within the sporting retail environment.

Appendix A - Consent Form

We are asking you to participate in a research study. In this form, you will find all the necessary information about the study. If you have any further questions, please ask to the researcher in charge.

Project Title: Investigating the impact of immersing technology features in sports retail environment on user experience and consumer behavior.

Principal Investigator: Jiaming Zhang; Design & Environmental Analysis
Email: jz539@cornell.edu **Phone**: (607) 379-3266

What the study is about
The purpose of this research is to understand the impact of immersing technology features in sports retail environments on consumers' perception and behavior in the shopping environment.

What we will ask you to do
In this session, you will first be asked to finished a pre-survey about your background and shopping style. Secondly, imagine that you are in a big shopping mall in Manhattan, NYC, and you will be invited to a virtual sports retail environment on a TV display. You will have around 3 mins in this store, and you won't have control over the browsing route within the store. You will be then asked to complete a questionnaire about your experience after the completion of the store visit. The entire experiment will take 15-20 minutes.

Risks and discomforts
We do not anticipated risks beyond those encountered in day-to-day life.

Benefits/Payments
A $5 Amazon gift-card will be awarded upon completion of the study.

Privacy/Confidentiality
We anticipate that the videos of your participation and the results of your questionnaire will be private and used only for the purpose of the study. Only the team of researchers will have access to this material. Once the study is completed all the files will be saved indefinitely on the personal hard-drive of the researchers. Each researcher will add a personal security code to access at the files on the personal hard-drive.

Do you allow the researcher to add a picture of you conducting the study in scientific publications?
Yes [ ] No [ ]

Do you allow the researcher to add pictures/video of you in others media (newspapers, journals or public events), in order to show up the results of research and methodology? Yes [ ] No [ ]

Taking part is voluntary
Your participation is voluntary. You may refuse to participate before the study begins, discontinue at any time, or skip any questions/procedures that may make you feel uncomfortable.

If you are injured by this research
In the event that any research related activities result in an injury, treatment will be made available including

first aid, emergency treatment, and follow up care as needed. Cost for such care will be billed in the ordinary manner to you or your insurance company. No reimbursement, compensation, or free medical care is offered by Cornell University. If you think that you have suffered a research related injury, contact Jiaming Zhang at (607) 379-3266.

If you have questions

The main researcher conducting this study is Jiaming Zhang, a MSc Student at Cornell University. Please ask any questions you have now. If you have questions later, you may contact Jiaming Zhang at jz539@cornell.edu or at 607-379-3266. If you have any questions or concerns regarding your rights as a subject in this study, you may contact the Institutional Review Board (IRB) for Human Participants at 607-255-5138 or access their website at http://www.irb.cornell.edu. You may also report your concerns or complaints anonymously through Ethics point online at www.hotline.cornell.edu or by calling toll free at 1-866-293-3077. Ethics point is an independent organization that serves as a liaison between the University and the person bringing the complaint so that anonymity can be ensured. You will be given a copy of this form to keep for your records.

Statement of Consent

I have read the above information, and have received answers to any questions I asked. I consent to take part in the study.

Your Signature_____ Date_____

Your Name (printed)_____

Signature of person obtaining consent Date_____

Printed name of person obtaining consent_____

This consent form will be kept by the researcher for at least five years beyond the end of the study.

Appendix B – Pre-Questionnaire

Welcome to the **Innovation Sports** retail store!

Demographic Information

What's your age?

What's your gender indentity?

- ○ Male
- ○ Female
- ○ Other/Prefer not to tell

What is your ethnic identity?

- ○ White
- ○ Black or African American
- ○ American Indian or Alaska Native
- ○ Asian
- ○ Native Hawaiian or Pacific Islander
- ○ Other

What is your cultural style identity?
In other words, what culture do you most think/act like and associate yourself with?

- ○ Western (e.g. America, Europe, Australia)
- ○ Eastern (e.g. Asian)

What's your major?

Which retail environment are you experiencing?

- ○ 1
- ○ 2

Shopping Value - Part I

Please rate your level of agreement with the following statements:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
To me, shopping is an adventure.	○	○	○	○	○	○	○
I find shopping stimulating.	○	○	○	○	○	○	○
Shopping makes me feel like I am in my own universe.	○	○	○	○	○	○	○
When I'm in a down mood, I go shopping to make me feel better.	○	○	○	○	○	○	○
To me, shopping is a way to relieve stress.	○	○	○	○	○	○	○

	Strongly		Somewhat	Neither agree nor	Somewhat		Strongly

	disagree	Disagree	disagree	disagree	agree	Agree	agree
	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I go shopping when I want to treat myself to something special.	○	○	○	○	○	○	○
I like shopping for others because when they feel good I feel good.	○	○	○	○	○	○	○
I enjoy shopping for my friends and family.	○	○	○	○	○	○	○
I enjoy shopping around to find the perfect gift for someone.	○	○	○	○	○	○	○
For the most part, I go shopping when there are sales.	○	○	○	○	○	○	○

Please rate your level of agreement with the following statements:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I enjoy looking for discounts when I shop.	○	○	○	○	○	○	○
I enjoy hunting for bargains when I shop.	○	○	○	○	○	○	○
I go shopping with my friends or family to socialize.	○	○	○	○	○	○	○

	Strongly		Somewhat	Neither agree nor	Somewhat		Strongly

	disagree	Disagree	disagree	disagree	agree	Agree	agree
I enjoy socializing with others when I shop.	○	○	○	○	○	○	○

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
Shopping with others is a bonding experience.	○	○	○	○	○	○	○
I go shopping to keep up with the trends.	○	○	○	○	○	○	○
I go shopping to keep up with the new fashions.	○	○	○	○	○	○	○
I go shopping to see what new products are available.	○	○	○	○	○	○	○

Please rate your level of agreement with the following statements:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
It is important to accomplish what I had planned on a particular shopping trip	○	○	○	○	○	○	○
On a particular shopping trip, it is important to find items I am looking for.	○	○	○	○	○	○	○
It feels good to know that my shopping trip was successful.	○	○	○	○	○	○	○

	Strongly		Somewhat	Neither agree nor	Somewhat		Strongly

	disagree	Disagree	disagree	disagree	agree	Agree	agree
I like to feel smart about my shopping trip.	○	○	○	○	○	○	○
It is disappointing when I have to go to multiple stores to complete my shopping.	○	○	○	○	○	○	○
A good store visit is when it is over very quickly.	○	○	○	○	○	○	○

Product Involvement

We would like to know **how interested you are in sports merchandise (e.g. sportswear, shoes, and sports accessories, etc).** Please use the series of descriptive words listed below to indicate your level of interest in **sports merchandise (e.g. sportswear, shoes, and sports accessories, etc)**.

Important	○	○	○	○	○	○	○	Unimportant
Irrelevant	○	○	○	○	○	○	○	Relevant
Means a lot to me	○	○	○	○	○	○	○	Means nothing to me
Unexciting	○	○	○	○	○	○	○	Exciting
Dull	○	○	○	○	○	○	○	Neat
Matters to me	○	○	○	○	○	○	○	Doesn't matter to me
Boring	○	○	○	○	○	○	○	Interesting
Fun	○	○	○	○	○	○	○	Not fun
Appealing	○	○	○	○	○	○	○	Unappealing
Of no concern to me	○	○	○	○	○	○	○	Of concern to me

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Appendix C – Post-Questionnaire

Emotions

This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you feel right now, that is, **at the present moment**. Use the following scale to record your answers.

	Very slightly or not at all	A little	Moderate	Quite a bit	Extremely
Enthusiastic	○	○	○	○	○
Interested	○	○	○	○	○
Determined	○	○	○	○	○
Excited	○	○	○	○	○
Inspired	○	○	○	○	○
Alert	○	○	○	○	○
Active	○	○	○	○	○

	Very slightly or not at all	A little	Moderate	Quite a bit	Extremely
Strong	○	○	○	○	○
Proud	○	○	○	○	○
Attentive	○	○	○	○	○
Scared	○	○	○	○	○
Afraid	○	○	○	○	○
Upset	○	○	○	○	○
Distressed	○	○	○	○	○

	Very slightly or not at all	A little	Moderate	Quite a bit	Extremely
Jittery	○	○	○	○	○
Nervous	○	○	○	○	○
Ashamed	○	○	○	○	○
Guilty	○	○	○	○	○
Irritable	○	○	○	○	○
Hostile	○	○	○	○	○

Memory

Please choose whether item has appeared in the store or not.

This item appeared in the store.

Yes ○ No ○ Maybe ○

This item appeared in the store.

Yes ○ No ○ Maybe ○

This item appeared in the store.

Yes ○ No ○ Maybe ○

This item appeared in the store.

Yes No Maybe

This item appeared in the store.

Yes	No	Maybe
○	○	○

Behavioral Intention - Part I

Please rate your level of agreement with the following statements:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I think this store environment attracts me	○	○	○	○	○	○	○
I think this store environment draws my full attention	○	○	○	○	○	○	○

	Strongly		Somewhat	Neither agree nor	Somewhat		Strongly

	disagree	Disagree	disagree	disagree	agree	Agree	agree
I think this store environment catches my eye	O	O	O	O	O	O	O
After looking around the store, I feel an interest in the merchandise	O	O	O	O	O	O	O
After looking around the store, I like the merchandise	O	O	O	O	O	O	O

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
After looking around the store, I have a good impression of the merchandise	O	O	O	O	O	O	O
After looking around the store, I think I need the merchandise	O	O	O	O	O	O	O
After looking around the store, I want to have the merchandise	O	O	O	O	O	O	O
After looking around the store, I hope I can get the merchandise	O	O	O	O	O	O	O

Please rate your level of agreement with the following statements:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree

	Strongly		Somewhat	Neither agree nor	Somewhat		Strongly

	disagree	Disagree	disagree	disagree	agree	Agree	agree
After looking around the store, I think the merchandise are worth purchasing	○	○	○	○	○	○	○
After looking around the store, I think I am willing to buy the merchandise	○	○	○	○	○	○	○
After looking around the store, I think the merchandise will benefit me	○	○	○	○	○	○	○
After looking around the store, I think I will share the experience with my friends	○	○	○	○	○	○	○
After looking around the store, I think I will share the experience and comments about the merchandise on the Internet	○	○	○	○	○	○	○

I think this store environment is impressive.

- ○ Strongly disagree
- ○ Disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Agree
- ○ Strongly agree

After looking around the store, I can remember this environment.

- ○ Strongly disagree
- ○ Disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Agree
- ○ Strongly agree

After looking around the store, I can recall its content.

- ○ Strongly disagree
- ○ Disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Agree
- ○ Strongly agree

After looking around the store, I think I will search for information about the merchandise.

- ○ Strongly disagree
- ○ Disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Agree
- ○ Strongly agree

After looking around the store, I think I will search for online word-of-mouth about the merchandise.

- ○ Strongly disagree

- ○ Disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Agree
- ○ Strongly agree

After looking around the store, I think I will compare prices of the merchandise on internet.

- ○ Strongly disagree
- ○ Disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Agree
- ○ Strongly agree

Behavioral Intention - Part II

Please rate your level of agreement with the following statements:

	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
I would shop in this store.	○	○	○	○	○	○	○
I would never purchase an item in this store.	○	○	○	○	○	○	○
I would definitely purchase an item in this store.	○	○	○	○	○	○	○

	Strongly		Somewhat	Neither agree nor	Somewhat		Strongly

	agree	Agree	agree	disagree	disagree	Disagree	disagree
I would consider buying products at this store.	○	○	○	○	○	○	○
I am willing to buy the products at this store.	○	○	○	○	○	○	○
If I were going to buy sport clothing, I would probably purchase at this store.	○	○	○	○	○	○	○

	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
If I were going to buy sport clothing, I would probably not purchase at this store.	○	○	○	○	○	○	○
I would return to this store in the future.	○	○	○	○	○	○	○
I do not expect to visit this store in the future.	○	○	○	○	○	○	○
It is likely that I will visit this store in the future.	○	○	○	○	○	○	○
I would say positive things about this store.	○	○	○	○	○	○	○
I would recommend this store to others.	○	○	○	○	○	○	○

	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree

	Strongly		Somewhat	Neither agree nor	Somewhat		Strongly

	agree	Agree	agree	disagree	disagree	Disagree	disagree
I would recommend this store to someone else who seeks my advice.	○	○	○	○	○	○	○
I would complain to my friends about my experience at this store.	○	○	○	○	○	○	○
I would discuss my frustration with my experience at this store publicly.	○	○	○	○	○	○	○
I would say negative things about this store to other people.	○	○	○	○	○	○	○

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